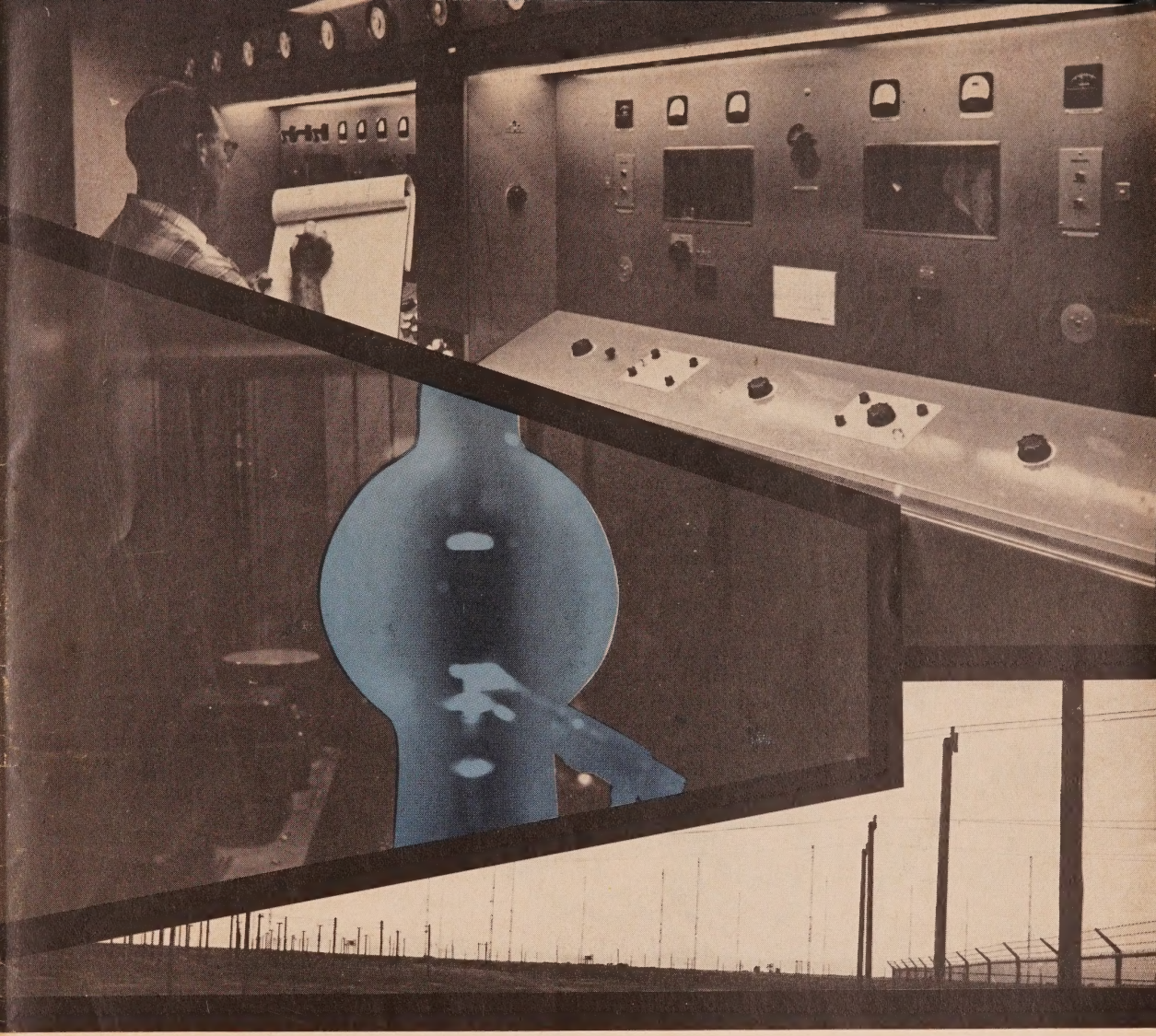


TECHNICIAN ENGINEER

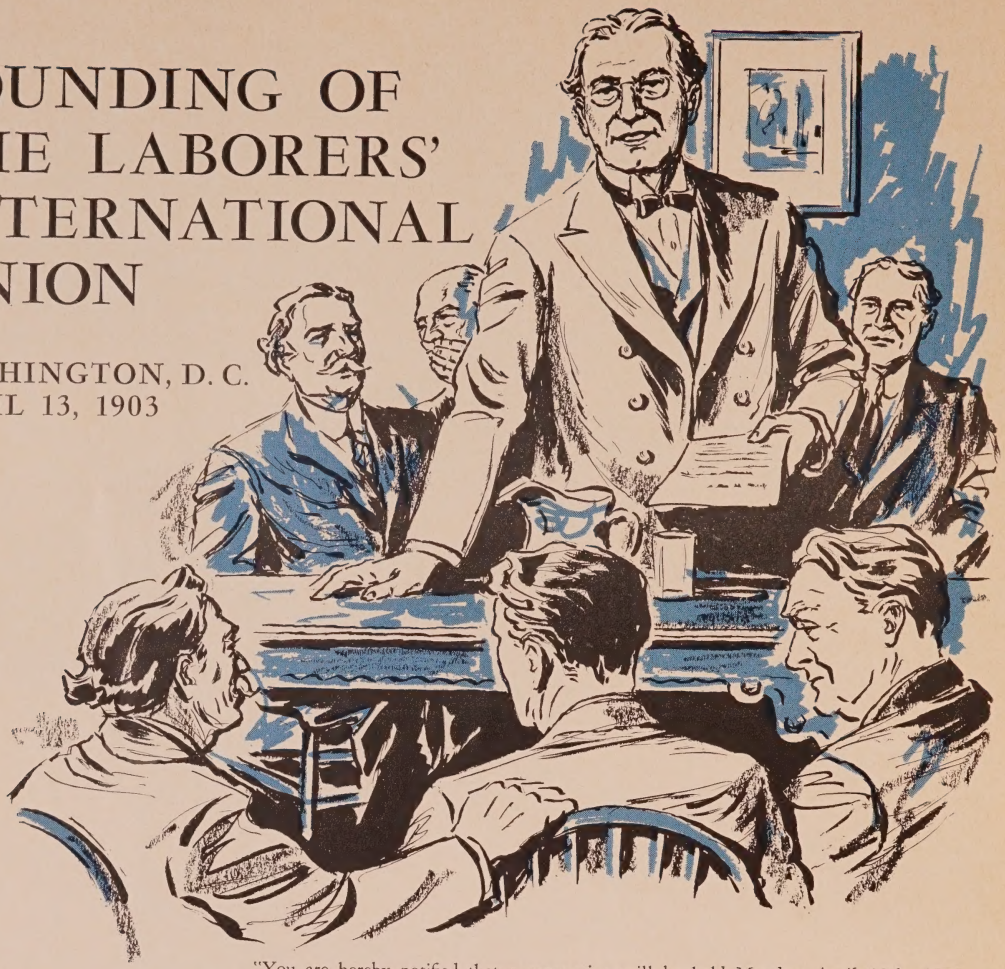
OCTOBER, 1963

Published for the Employees of the Broadcasting, Recording and Related Industries

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO

FOUNDING OF THE LABORERS' INTERNATIONAL UNION

WASHINGTON, D. C.
APRIL 13, 1903



"You are hereby notified that a convention will be held Monday, April 13th, 1903, at 423-25 G Street, Washington, D. C."

These words were included in a letter from Samuel Gompers, president of the American Federation of Labor, inviting delegates from locals in several cities to a meeting in Washington to unite these locals into one union and to write a constitution.

Twenty-five delegates from 17 cities and representing 8,000 laborers met at the first convention with two Chicago locals leading in representation — 4,039 members and 2,150 members. A Chicago man, Belgian-born Herman Lilien, was elected president and H. A. Stemburgh, Waverly, N. Y., was named secretary-treasurer. President Gompers personally officiated at the installation of officers.

More than a dozen resolutions were passed and set a sound pattern for future action. The constitution was adopted and an important statement of jurisdiction agreed upon. The convention authorized printing the constitution in as many languages as necessary, a recognition of the diverse ethnic character of the organization. The convention also authorized payments to the secretary-treasurer of $25 a month!

A "Declaration of Principles" was passed and with its resolutions adopted, jurisdiction stated and officers named, the new union which called itself the "International Hod Carriers' and Building Laborers' Union of America" was off to a healthy start — and this founding for a group of workers in serious need of organization was indeed a landmark of labor in the early days of the century.

Reprinted with permission from THE LABORER, official publication of the International Hod Carriers', Building and Common Laborers' Union of America.

The INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS
GORDON M. FREEMAN — International President
JOSEPH D. KEENAN — International Secretary
JEREMIAH P. SULLIVAN — International Treasurer
ALBERT O. HARDY — Editor, Technician-Engineer

TECHNICIAN ENGINEER

VOL. 12, NO. 10
ALBERT O. HARDY, Editor

in this issue

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the cover

This month we visit the facility at Delano, California, near San Francisco, where members of Local Union 45 man the big transmitters for Voice of America's Far East broadcasts. The huge vacuum tube glowing at left center on our front cover is only one of the impressive elements of a broadcasting array which has been beaming signals overseas for years. In the top photo, transmission lines and antennas make a pattern in the Delano skyline. In the lower picture, Brother Ralph Agee logs meter readings, an unending task.

index

For the benefit of local unions needing such information in negotiations and planning, here are the latest figures for the cost-of-living index, compared with 1961 figures: August, 1963—107.1; August, 1962—105.6.

commentary

I would like to advance one concept for creating jobs.

There are approximately 6 million business firms in operation in the U. S.—almost one for every unemployed worker.

Why not amend the corporate tax structure to permit these business firms a special tax break or some other form of subsidy for each job they can show was specially created to make work for an unemployed American? After all, human beings should be regarded as important as potatoes.

This could work for the smallest business or larger manufacturers. Pursued intensely throughout the business world, this conceivably could produce dramatic results.

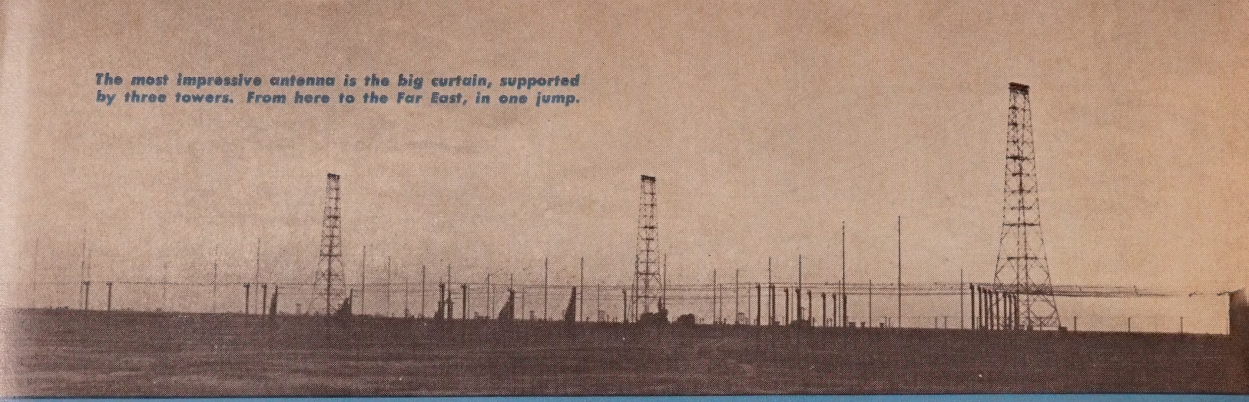
Featherbedding? Perhaps, in a sense, but we believe a small business which employs a jobless American, with the encouragement of a special tax incentive, would find something for that person to do.

If some dramatic solution to unemployment can be found, it cannot be too costly at any price.

This is an unusual proposal, but it will take an unusual approach to solve what has become an unusual national crisis.

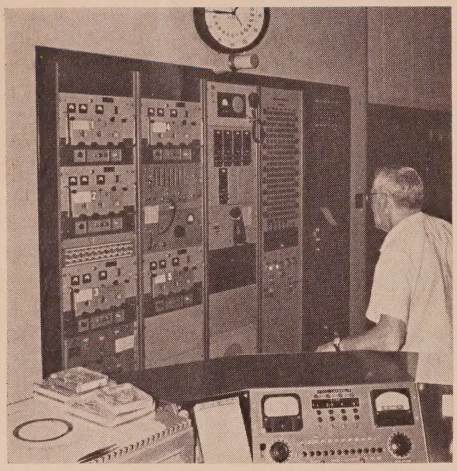
—LEE W. MINTON, *President, Glass Bottle Blowers, AFL-CIO*

Published monthly by the International Brotherhood of Electrical Workers, AFL-CIO, 1200 Fifteenth St., N.W., Washington, D. C., for the employees of the broadcasting, recording, and related industries. Second class postage paid at Washington, D. C. Subscription, $2 per year.



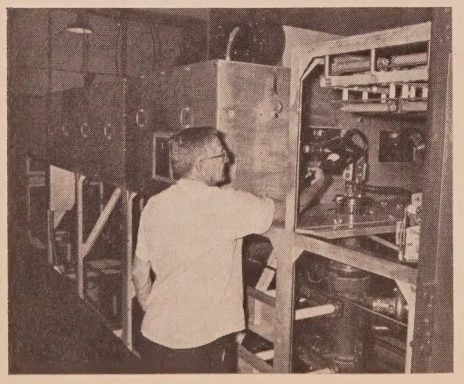
The most impressive antenna is the big curtain, supported by three towers. From here to the Far East, in one jump.

THE FAR EAST VOICE AT DELANO



Above: Brother Rose watches the Berkeley counter for frequency deviation of one of the transmitters. Note the VFO's (with the big numbers 1 thru 5), which have dial calibrations with one-cycle increments.

Below: Mel Rose checks the filament current with a clamp-around ammeter, on one of the final amplifier tubes in a superpower transmitter.



Voice of America Transmitters Serve Far East at High-Power Center

DELANO, California, is a relatively small town, the center of a farm area and, at first glance, not much different from many other towns in South-Central California. Some 30 miles north of Bakersfield and about 140 miles north of Los Angeles, on US 99, its tallest landmarks are the tall, tall towers of the international short-wave transmitters just west of town. The station and its station-break "jingle" is well-known to thousands of overseas listeners, in such places as Okinawa, Formosa, and Burma, and relatively little-known to the citizenry of Central California.

The visitor may be a little awestruck by the enormity of the parts of the whole (plant)—such things as filament ammeters showing 600 amperes at 24 volts, cathode current meters with scales of 25 amperes (*anyone for 40-meter SSB?*) and 440-volt line voltmeters lazily varying with modulation peaks.

Currently, 5 transmitters are housed in the big, grey concrete building. Two 100 kw. transmitters form the top of the "T," in the transmitter room with that shape, with a 200 kw. rig on one side of the leg of the T and two 50 kw. transmitters on the opposite side.

With digital frequency meters for fast carrier-frequency checks of all the transmitters, VFO's with almost-fabulous accuracy and stability, this plant is a combination of a he-man's brute force and a ballet-dancer's precision and accuracy.

The Voice has a network of 87 transmitters, of

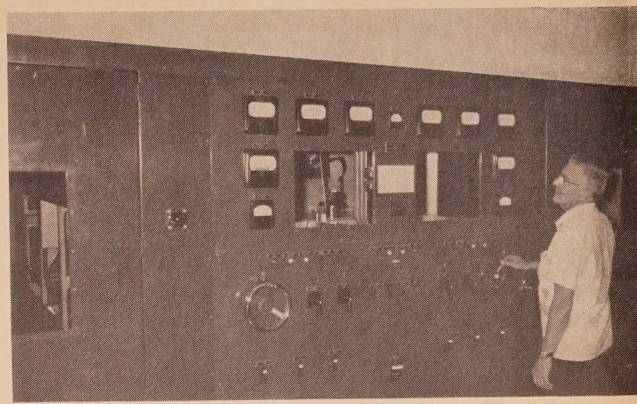
which 32 are in the United States. These latter are shortwave stations ranging in power from 25 thousand to 200 thousand watts, and operated under contract to VOA by private broadcasting companies. Government-owned or controlled relay stations are located at Munich, Salonika, Tangier, Ceylon, the Philippines and Okinawa. These installations comprising short, medium and long-wave stations, include million-watt transmitters—the world's most powerful known broadcasting facilities—in the Philippines, Okinawa, and Munich.

Relay facilities are also leased from BBC in England. Other relays or rebroadcasts are made through arrangements with local broadcasters of Western Europe, the Near East, Africa, Southeast Asia, the Far East and Latin America.

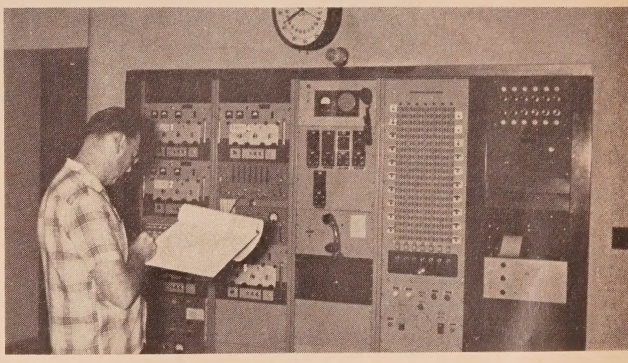
The Voice has a floating broadcasting station, the U. S. Coast Guard Cutter *Courier*, which uses high powered medium wave and shortwave transmitters. The *Courier* provides VOA with a mobile and flexible relay station to meet the demands of the changing world situation and to combat Soviet jamming.

Far East broadcasts of VOA are in several languages. Here's a list of languages beamed to the Far East and the hours and minutes per day for each:

Amoy	2:00
Burmese	2:00
Cantonese	3:00
Cambodian	1:00
Indonesian	2:00
Japanese	1:30
Korean	2:30
Lao	:30
Mandarin	4:30
Russian	1:30
Thai	1:00
Ukrainian	:30
Vietnamese	2:00
Total	24:00

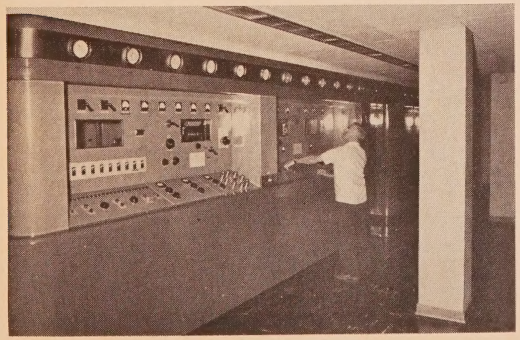


Above: Rose awaits the application of power and stands ready to adjust it.

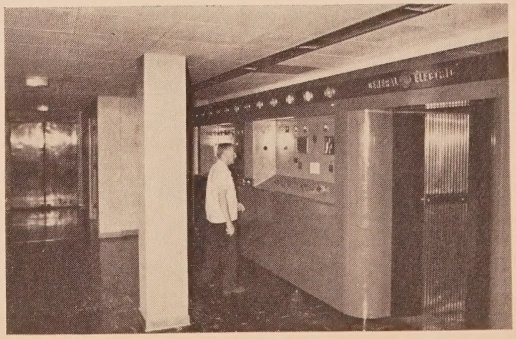


Above: Ralph Agee works on the log sheet for one of the transmitters.

Below: A view of one of two 100 kw. GE transmitters.



Below: The other of the two 100 kw's under inspection.



REPORT ON THE 1963 PROGRESS MEETING

General Counsel Louis Sherman talks to an attentive audience of broadcasting and recording union delegates at Chicago.

THE 12th annual Progress Meeting was held at the Oxford House Motor Hotel in Chicago on August 20, 21 and 22. IBEW local unions were represented by some 35 delegates, and 10 members of the International Staff were also present.

Greetings were extended to the delegates by President M. W. Balousek of Local Union No. 1220, who also detailed a three-day program for the wives and families. The program included tours of points of interest, boat rides, a fashion show-luncheon, and so on. It should be noted that all of the tours and various entertainments were capably handled by a committee of members of the Local Union, chaired by genial Bill Brock.

Then, immediately to the business at hand. International Representative Cox spoke on the subject of statistics—particularly those relating to the wage compilation printed just in advance of the meeting. After a discussion on the floor, which seemed to indicate full understanding of the data presented, Brother Cox went on with a discussion of his second subject—actions of the Federal Communications Commission. He pointed out that, for the first time, there is an explicit statement by the Commission, on the record, relating to logging procedures. He quoted Section 3.113(a)(3) of the Rules and Regulations, relating to entries in the transmitter operating log, requiring:

*"(a) The following entries shall be made in the operating log * * **

"(3) An entry, at the beginning of operation and at intervals not exceeding one-half hour, of the following (actual readings observed prior to making any adjustment to the equipment) and, when appropriate, an indication of corrections made to restore parameters to normal operating values."

From statistics to more statistics—remote control. This latter subject being an interest best reported as the result of personal investigation and observation, Chairman Hardy and International Representatives Lighty and Ippolito added information on present-day and immediately-past day visits to stations engaged in experimental operations.

The afternoon session was devoted largely to a comprehensive presentation by Representative Taylor L. Blair, Jr., on the subject of "Organizing, and How to Train Organizers." He supplemented his remarks with a number of full-color slides of his own design and manufacture. Following what might be termed his "formal" remarks, a question-and-answer period gave ample weight to the interest he had engendered.

THE second day of the meeting consisted largely of a formal address, in the morning session, by IBEW Counsel Louis Sherman. The afternoon session began with a question-and-answer period with our counselor and was followed by a report by International Representative B.

G. "Buck" Williamson of the Fourth District. Rep. Williamson prefaced his chief topic with a short review of his experience in connection with litigation and the relationships of the legal profession with labor unions, adding his general advice as to the retention of counsel by local unions—matters particularly pertinent, since our General Counsel was instantly available for comments. Buck then went on to explain and advise on the subject of a labor course just completed at the University of Wisconsin, as one of the IBEW participants in the course.

PROGRESS MEETING LEGAL SESSION

The specific remarks of the IBEW's General Counsel at the Chicago meeting will not be published this year. While this is regrettable, from many standpoints, his remarks were generally off-the-record and of such nature as to preclude their dissemination in print. Let it suffice to say that Mr. Sherman's address covered organized labor's problems in legislation, self-administration, enforcement of its demands, rights and privileges, and the trends of recent events.

He then went on to a discussion of recent, important decisions of Federal courts and the NLRB and the philosophy underlying some of those decisions, as his office views them.

FOLLOWING the Wednesday afternoon session was a cocktail hour and then a dinner and floor show, provided by Local Union 1220. Especially in view of the particular audience, which can be assumed to be more critical than the average, the entertainers did extremely well. The applause was genuine, loud and lengthy. Hardly more need be said—the show was well done, well-received and worthy of its plaudits. The food was excellent and the company likewise congenial.

Thursday's session began with the usual number of necessary announcements, and then proceeded with a discussion of inter- and intra-relationships with other unions. International Representative Lighty afforded the meeting the benefit of his many years in the field and passed on many tips on how to conduct union affairs in a complicated economic and social order which necessarily includes other unions and other people.

International Representative Peter Ippolito tackled the complicated subject of Automation and discussed the various available safeguards, how to present them and (hopefully) how to obtain them. He also made a number of pertinent observations regarding negotiating techniques and approaches, and an ensuing animated discussion was indicative of the interest of the delegates in the subject matter.

Representative Freeman L. Hurd spoke on the subject of stations with common ownership. Detailing the experience of history—and pointing out that what is past is prologue—his remarks pointed to the obvious conclusion that more and closer coordination is needed in this field of rapidly-expanding practices.

With a hearty, rising vote of thanks to the host local union, the meeting was adjourned on Thursday afternoon. The concensus of opinion, expressed at adjournment, and since that time, was that the meeting was worthwhile as well as enjoyable.

THE CHICAGO LOCAL UNION HOSTED A DINNER PARTY

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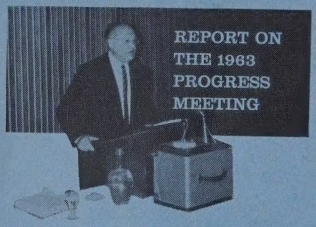


1. President Pat Finn, L.U. 1212 and his wife Joan, with Mrs. Leonard Bader, the better-half of the 1212 Business Manager, enjoying conversation with libation.

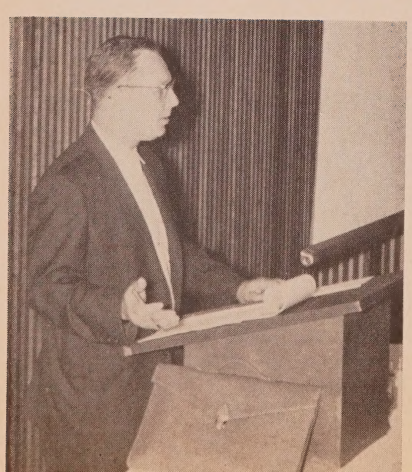
2. Arthur Feagins, Jr., delegate from L.U. 1221, Omaha-Lincoln and Bus. Mgr. Bill Dodson, L.U. 1292, Peoria, with Bill Reed, L.U. 1259, Kansas City.

3. The "Boys in the Back Row" one afternoon were Bill Burtt, Bus. Mgr., L.U. 1225; Galen Borton, President, L.U. 1300; Bus. Mgr. Bill Dodson, L.U. 1292; Pres. Eddie Collins of L.U. 1228 and Bus. Mgr. Jim McCurdy of 1228.

4. A session in Progress.

5. Rep. Taylor L. Blair, Jr., spoke at length on organizing.

6. B. M. Norm Weissman, L.U. 1266; Lloyd Peterson of L.U. 292; Intl. Rep. O. E. Johnson; Bill Nixon of L.U. 995; Pres. Galen Borton of L.U. 1300; John Spencer of L.U. 347; and B. M. Jack Moore of L.U. 453.



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Lend a Helping Hand To The Handicapped

BY PRESIDENT GORDON M. FREEMAN

International Brotherhood of Electrical Workers and Vice-Chairman, President's Committee on Employment of the Handicapped.

NEWSPAPERS:

From 'Excellent to Appalling'

Some interesting, praiseworthy and critical comments on newspapers have been made in a report by the Dean Edward W. Barrett of the Graduate School of Journalism of Columbia University in New York.

The nation today is about as well informed as any in the world and on balance, there is less willful distortion of the news than ever before, Dean Barrett wrote.

"The central question is whether the nation's news organs are improving rapidly enough to meet the enormous challenges of an atomic-age democracy," he added. "To this question, the candid answer is No."

He noted that daily newspapers "range from excellent to appalling" with somewhere "between ten and eighteen" ranked as excellent and at the other pole "a total of perhaps another fifty newspapers ranked as bad . . . some because of a tendency to distort news to conform with the owner's prejudices, others because of sheer incompetence in reporting and editing, some because of both faults."

Dean Barrett wrote that the newspaper monopoly is here to stay but, "Happily under responsible ownership, monopoly newspapers have proved that they can be more balanced and less sensationalized, that they can be bolder in resisting occasional pressures from advertisers, and that they can pay better salaries . . ."

"Unhappily," he added, "abuses of monopoly still exist. These sometimes involve blatant merchandising of the owners' prejudices. More often they involve ineptitude, timidity, and operating on what Ralph McGill of the Atlanta Constitution calls a 'sort of poll-policy'—finding out what the community power structure thinks and wants and then doing an editorial job of saying 'me, too'."

Such newspapers, he continued, find "local corruption and abuses too delicate to handle and compensate by lambasting waste in Washington, UN failure, and the government of Ghana."

"In their solicitude for the views of the owners' country club friends," Barrett wrote, "these papers too often forget Mr. Dooley's saying that one of the duties of a newspaper is to 'comfort the afflicted and afflict the comfortable."

The answers to monopoly abuses—lie in an aroused citizenry "demanding that its newspaper perform its public-service function responsibly, energetically, and honestly," he asserted. Sometimes important change "is effected simply by concerted desk-pounding on the part of a local leadership group, including ministers, educators, labor leaders, professionals and businessmen."

As Vice Chairman of the President's Committee on Employment of the Handicapped for the past eight years, I have learned much about the good job that handicapped persons can do when properly placed in employment for which they are trained and suited.

At the meeting called by the President of the United States in Washington yearly, we hear one testimonial after another given by employers of handicapped persons, citing from their records the fact that in the majority of cases, these persons, properly placed, are more productive, more reliable and have better employment records than do employees without handicaps.

When we hire an employee, we don't hire a pair of eyes, two legs or a strong back. We hire a whole person with all his capabilities and compensations.

As president of the International Brotherhood of Electrical Workers, I am pleased and proud that the members of our union and our employers have given so much support to the work of the President's Committee. There have been some remarkable results—results you can hardly believe are true. Would you think a blinded wireman with a little special training, and a small, simple instrument emitting sounds electronically, could wire houses as quickly, safely and efficiently as before?

Would you think that a lineman with no legs could learn to climb poles and again install high lines just as well as he could before his accident?

This was the performance of members of our Brotherhood. These cases and many, many more prove that years of training and experience need not be tragically wasted because of unfortunate accidents.

I could give you many less spectacular cases from IBEW case histories—how deaf mutes are the most efficient inspectors on an RCA record manufacturing assembly line, because the factory noise diverts them least, for example.

Space will not permit more discussion of our experience. However, I do make a strong plea to all union members everywhere, to do all you can to promote the hiring of handicapped persons.

The labor unions of this country have as their dedicated policy the aiding of working people everywhere. The handicapped want to work. They can do good work. Hiring them has proved sound business practice. Experience proves they make excellent union members.

Therefore, let us all, wherever and whenever we can, lend a hand to those less fortunate than ourselves and reap the benefits—not just in human satisfaction, but in the good job the handicapped will do—for the employer who hires them and the union that helps them.

FCC Issues Final Order on Operator Rules

REVISED RULES BECOME EFFECTIVE JANUARY 1, 1964

ON July 15, 1963, the Federal Communications Commission released its Report and Order in Docket No. 14746, RM-294, making certain changes in Parts 1, 3 and 13 of its Rules and Regulations effective on August 19, 1963. (Full text of the original Report and Order appeared in the July 1963 issue of the TECHNICIAN-ENGINEER, pp. 4-8).

However, the National Association of Broadcast Employees and Technicians filed a petition for reconsideration on July 22nd, and asked that the effective date of the new rules be stayed, pending Commission action on the petition. The Commission notes in its Memorandum Opinion and Order of October 16 that NABET's petition for stay was defective but that the importance of the proceeding was deemed by the Commision to justify a stay and that it was therefore ordered, by its own motion.

Its most recent issuance emphasizes that the Commission sought, in its revisions of its Rules and Regulations, to improve upon them as a *package*.

The requirement for daily transmitter inspections at all AM and FM broadcast stations, the more stringent requirements for third-class operators licenses, together with the Commission's now-detailed statements as to responsibilities of the station licensees are discussed at great length. But the substance of its previous Report and Order still stands, except in one instance.

The new Rules were to have become effective on August 19; however, lesser-powered stations were to be allowed to use operators having only restricted permits or third-class permits until February 19, 1964. After that latter date, the minimum requirement was to have been for the use of at least third-class operators with broadcast endorsements. Further consideration has led to the following conclusion, in paragraph 28 of the Memorandum Report and Order:

"28. In connection with the cutoff date discussed in the immediately preceding paragraph, it was our intent in the Report and Order herein that prior to the cutoff stations could contract for the part-time services of radiotelephone first-class operators even though utilizing restricted permittees or radiotelephone third-class permittees without broadcast endorsements for routine transmitter operation. Further consideration of the matter, however, convinces us that a wiser course to follow, in view of the 'package' character of the rules adopted herein directed at reducing technical violations of the stations involved, is to permit contracting for part-time services of first class operators prior to the cutoff date only if a station is using for routine transmitter operation radiotelephone third-class operators with broadcast endorsements or higher operator authority. This view is reflected in the Appendix hereto by the addition of notes after sections 3.93(c), 3.265(c), and 3.565(c). Thus, the lesser-powered stations involved may utilize the contract part-time alternative only after they comply with the third-class operator broadcast endorsement provision."

The IBEW also filed its further comments in this proceeding and asked for the reconsideration of the

QUOTABLE QUOTES FROM THE COMMISSION:

"It should be clear . . . that the principal purpose underlying the adoption of the new operator rules and the daily inspection requirement is to reduce the great number of technical violations."

* * *

"Stations do not relinquish their responsibility for proper performance, in hiring part-time operators. And such operators must enter in the station maintenance log a detailed, signed statement concerning their inspection, maintenance and repair activities."

* * *

"The new rules require that station licensees institute a training program to insure that the lesser-grade operators at the lesser-powered stations are adequately instructed in the duties required of them when not under the immediate supervision of a first-class operator."

—Docket No. 14746

Commission. The particular issue cited by the IBEW was based upon the fact that there is a shortage of holders of first class operator licenses, despite the anguished pleas of station operators that they need relief because of the unavailability of such personnel. The IBEW also reminded the Commission that the highly respected ex-commissioner, T. A. M. Craven, told the NAB in 1962 that "we have the finest engineering standards but they have been ignored."

The Brotherhood petition also emphasized that part-time employment or contracted-services is not a solution to the problem which is pointed up by the Commission's own records—namely, the rising record of notices of violations and the abuse of engineering standards in the broadcasting industry.

READING TIME

A REVIEW OF RECENT BOOKS

DICTIONARY OF ELECTRONICS COMMUNICATIONS TERMS *by the Howard W. Sams Engineering Staff. Howard W. Sams & Co., 4300 West 62nd Street, Indianapolis 6, Ind., 160 pp. $3.95.*

More than 2,500 terms related to the communications field are included in this paperback volume—from the letter A to "zone of silence." Many slang and colloquial terms which have found their way into common usage are also listed. For example: Lid—a slang term used in amateur radio to denote a poor CW operator.

AMERICAN WOMEN, *Report of the President's Commission on the Status of Women, Government Printing Office, Superintendent of Documents, Washington, D. C., 86 pp., $1.25.*

On October 11 the 24-member President's Commission on the Status of Women, headed by Eleanor Roosevelt until her death last year, presented its report to President Kennedy in White House ceremonies. The report is significant to organized labor and workers in general because it answers some topical questions regarding women workers. For example: Are women taking men's jobs.

The Commission's report says, generally, no. . . . Men and women compete for jobs only in a relatively small percentage of industrial and white collar jobs and to only a limited degree in the professions. How many male secretaries and file clerks have you seen lately?

Among 24 major recommendations of the Commission were these:

"The education of girls and women for their responsibilities in home and community should be thoroughly re-examined with a view to discovering more effective approaches, with experimentation in content and timing, and under auspices including school systems, private organizations, and the mass media."

"A widow's benefit under the Federal Old Age and Survivors Insurance System should be equal to the amount that her husband would have received at the same age had he lived. This objective should be approached as rapidly as may be financially feasible."

TELEVISION

as others see it

RUSSIAN

ТЕЛЕВИЗИЯ

YIDDISH

טעלעוויזיאָן

NORWEGIAN

FJERNSYN

ARABIC

تلفزيون

SPANISH

TELEVISIÓN

GERMAN

Fernsehen

GREEK

ΤΗΛΕΟΡΑΣΙΣ

VIETNAMESE

ĐIỆN THỊ

JAPANESE

テレビジョン

FRENCH

TÉLÉVISION

ITALIAN

TELEVISIONE

HINDUSTANI

टैलीवीयन

TELEVISION Magazine, an industry publication, was inspired recently to see what the word "television" looks like in other languages. It was the art director's idea. He called upon members of the magazine's staff for assistance, and they couldn't get beyond Spanish and French. The library was no help, "without turning loose a horde of researchers."

Someone finally suggested the Berlitz language schools, and Berlitz agreed to supply the foreign versions—at four bucks a word, accuracy guaranteed.

Then there was the job of hand lettering some of the words, for no printers or type houses had Hindustani, Arabic, etc., in stock. Finally, the column of words shown above went into print, appearing in TELEVISION's July issue.

We offer our congratulations.

BUREAU OF STANDARDS DEVISES A SYSTEM FOR TESTING MODULES WITHOUT PHYSICAL REMOVAL

NBS ENGINEER Michael Fulcomer tests module in electronic equipment by plugging in test device and observing which indicator lights up. Good indication shows module to be performing as specified on up to four simultaneous tests. Bad indicates that the module is out of tolerance and should be replaced.

FIST Developed as Quick Trouble-Shooter

ENGINEERS at the National Bureau of Standards have devised FIST (Fault Isolation by Semi-Automatic Techniques), a revolutionary new troubleshooting system that approaches the ultimate in simplicity. Intended for use on modularized electronic equipment, it was described to key personnel concerned with equipment maintenance in government and industry, at a one-day seminar, held at the NBS on September 12. Now being applied to a naval radar equipment, the system promises to have far-reaching consequences, when more widely adopted, in training and in procedures used for maintaining electronic equipment.

The amount and complexity of electronic equipment used in the military services has multiplied greatly in the past two decades, creating a need for many more skilled technicians. This, in turn, has led to continuing recruitment and training problems in the services. The resulting high cost of maintenance has increased the importance of reliability and maintainability as criteria in planning and accepting new electronic equipment.

Now being applied experimentally to a first equipment, the new trouble-shooting system is expected eventually to have an impact on the maintenance of military and other high-reliability electronic equipment comparable to that resulting from modularization. The system consists of a small, hand-carried general purpose test instrument together with the special circuits and receptacles built in as part of the prime equipment being tested. The test instrument has a red light, a green light, a test plug on a cord, and a *self-test* receptacle; it includes four voltage comparators and logic circuitry. The operator can check tester operation at any time by plugging it into its *self-test* receptacle.

GREEN AND RED INDICATORS

In use the test set, which occupies only a fifth of a cubic foot, gives a green *(good)* or red *(bad)* indication when plugged into each test receptacle at which a test is possible. The module is within tolerance if a *good* indication is obtained. If neither indicator lights —the *no-test* response—this indicates that all needed inputs are not present at the module. The operator can test the modules in any order with a uniform simple procedure for all types of tests. He can save some time, however, by first plugging into each group test receptacle to localize the area of failure, and then into the constituent module receptacles to find the defective module.

Circuits needed by the system to adapt module operational parameters for *good-bad* indication by the test instrument are in the prime equipment. They are being designed with subminiature components on printed circuit boards, so they can be mounted on the backs of the module test receptacles. All of these transformation networks are passive, permitting the measurement of properties such as a-c and d-c voltages, frequency, amplification, voltage waveforms, impedance, frequency response, and a variety of other electronic and physical

measurements. Each transformation network operates to permit each desired operational and circuit parameter to be sensed as small voltages.

The test set operates by comparing two voltages for each test, such as the input to an amplifier module and its output. The design of the transformation network is such that it converts the amplifier input and output signals into voltages of comparable magnitude provided that the amplification is within design tolerances. The test set comparator determines whether or not these voltages have comparable magnitudes.

The output signal is actually obtained alternately at opposite ends of one of the resistors in the attenuation network, the components of which have such values that the normal attenuated voltage is obtained at the high end of the tolerance resistor for a module of the lowest acceptable gain and at the low end for the highest-gain module acceptable. Any module of this type having a gain between the acceptable limits must produce an output signal that is greater than the ideal level when sampled at one end of the tolerance resistor and less than the ideal at the other end.

The comparator input is switched alternately between the ends of the tolerance register, so that its output changes polarity in testing a module characteristic within the specified limits. This makes for simplification of the circuitry and the indication. The comparator drives a zero-crossing detector circuit which operates the green *(good)* indicator light if the comparator output changes polarity and crosses zero. Failure of the comparator output to reverse polarity (indicating a module characteristic exceeding either limit) causes the detector to energize the red *(bad)* indicator.

A simple one cell test set would consist of two input amplifiers, identical except for one having a switch selecting its input from either end of the tolerance resistor; two peak-to-peak detectors to rectify the signals; a differential d-c amplifier to compare them; a zero-crossing detector; and logic circuits. Four such cells in each test set permit the simultaneous measurement of interacting module parameters. The test set operator needs no skill or training to identify and replace the failed module; he need know no more about electronics or the equipment being tested than the maintenance man who replaces the electric light bulbs.

PROJECT SAFARI

FIST design techniques not only carry on the maintenance revolution already started by modularization, but have already sired a project promising an even more radical change in maintenance. This is Project SAFARI (Semi-Automatic Failure Anticipation Recording Instrumentation), a system of measuring and recording equipment performance. SAFARI consists of a tester, much like the FIST tester except that it presents performance figures in a graphical form using a device for recording and viewing module performance as a function of time.

Project SAFARI uses equipment performance measurements obtained from a test device similar to that of FIST, but which in addition graphically plots successive measurements for comparison with an established rejection level. The rate at which the performance approaches this level can be easily monitored and the module replaced before the rejection level is reached. This procedure could add a new order of reliability to electronic equipment that is used where reliability is the greatest consideration.

The greatest impact of the FIST troubleshooting system is expected to be in alleviating the shortage of capable electronic technicians, by enabling unskilled personnel to do many of the required tasks. Secondary effects will be a higher level of dependable operation due to better maintenance, reduced numbers of technicians to be trained and the accompanying possibility of creating a small elite corps of technicians, trained in greater depth. While not all equipment failures can be troubleshot by means of FIST, repaired by module replacement, or anticipated by SAFARI, the number of failures that respond to these techniques is expected to be sufficient to greatly reduce the burden of troubleshooting and repair now performed by technicians.

HANDS ACROSS THE SEA, WHAT?

The following glossary is digested from a piece in *The Clerk*, published by the Clerical & Administrative Workers' Union in Great Britain. Bear in mind that "annual conference" means convention and "branch" means local union:

A Beginner's Guide to Conferences & Conventions

Delegates: Members who dislike gardening and/or taking the family out at Easter.

Visitors: People who sit in the gallery when it is raining outside and the shops in the town are shut.

Tellers: Persons who can tell whether a delegate's hand is supposed to be up during a vote.

What They Say and *What They Mean:*

"It is my privilege and pleasure to welcome you to . . .": *If your delegates don't behave themselves better than they did last time, we shan't let you come here again.*

"I formally move": *I think this motion is utter drivel, but my Branch wouldn't have sent me here if I hadn't agreed to move it.*

"I don't wish to take up the time of the Conference: *I intend to go on, and on, and on, ignoring the green and red lights, until the president stands up and orders me to stop.*

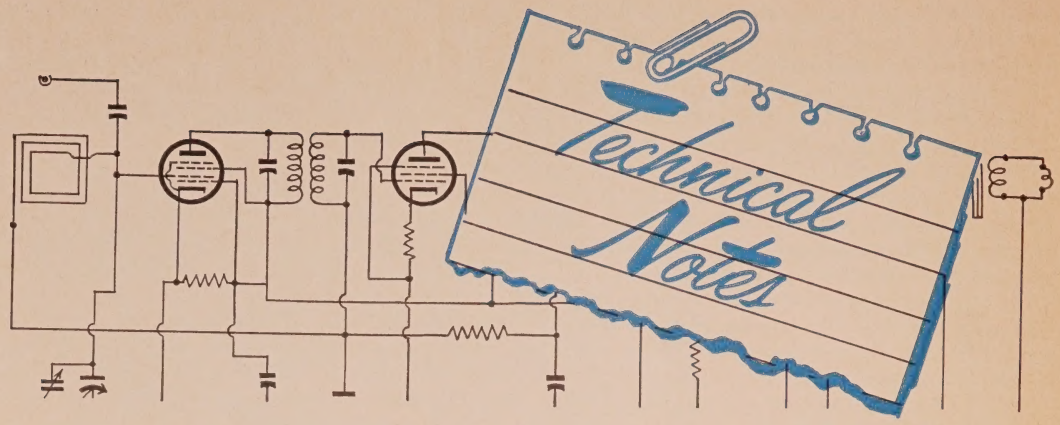
"The members of my Branch are seething with indignation": *The dozen members that I managed to bully into attending the Branch Meeting passed the motion in three minutes so that they could go home and watch the boxing on television.*

"I agree to remit this motion to the Executive Council": *If this goes to a vote we're sunk.*

"I have the greatest respect for the previous speaker": *Everyone can see he's a blithering idiot.*

"I congratulate the young delegate from . . . on his brilliant speech": *The cheeky young pup thinks he knows it all.*

"We all acknowledge the wisdom of Mr. . . .": *The old fool is doddering. It's time they replaced him by someone else.*



HIGHEST SELF-SUPPORTED TOWER

Completed last year for Station WITI-TV—a station employing members of Local Union 715 in Milwaukee, Wis.—was the tallest *self-supporting* tower in the United States. It is just a few feet less than another free-standing tower in Tokyo, which is the world's tallest.

The overall height of the WITI-TV structure from ground level to the top of the beacon light protector is 1,079 feet . . . which doesn't make it the highest tower for TV, of course . . . just the tallest structure without supporting guy wires, etc.

The tower proper is 988 feet high, four feet more than the Eiffel Tower. Its width at the top is 7 feet, six inches, and at the base more than 114 feet. The bottom bracing section is 104 feet high.

In addition to the commercial antenna at the top of the tower, there are two educational TV antennas mounted on the sides. Provision has been made for a future FM rig near the top. About 230 feet above the base the station expects to install signs for the channel number, call letters, and current weather forecast. WITI-TV is a station operated by the Storer Broadcasting Company.

PROBLEMS OF IMPORTED HAMS

In their capacities as ham operators, Sen. Barry Goldwater of Arizona and Herbert Hoover, Jr., who was Under Secretary of State in the Eisenhower Administration, recently appeared before the Senate Communications Subcommittee to urge approval of a Goldwater bill to allow alien hams to operate their shortwave stations in this country.

Aliens have been denied this privilege since Hoover's father was President.

Goldwater testified that American hams, many of them stationed in key military, diplomatic or missionary posts, were being denied the privilege of operating their stations in countries that have retaliated against the American law.

The bill would permit the Federal Communications Commission to authorize, but not license ham operations by foreign residents whose countries grant similar authority to American citizens abroad.

Goldwater said nearly 260,000 American hams, about 70 per cent of the world ham population, supported the bill. He said there was no jeopardy to national security involved because jet airplanes, diplomatic pouches and cables are preferred by spies to the heavily monitored amateur spectrum.

Goldwater, whose personal call is K3UIG in his Washington, D. C., apartment and K7UGA in Phoenix, said he had made a "tentative date" with Peace Corps Director R. Sargent Shriver to explore the potential of ham radio to under-developed areas. Chairman John O. Pastore (D-R.I.) called the Peace Corps idea "brilliant" and said he hoped for early action on Goldwater's bill.

Hoover is a consulting engineer and president of the American Radio Relay League and the International Amateur Radio Union. His call sign is W6ZH.

HEARING WITHOUT EARS

Do you really need ears to "hear"? No, says an amazing 18-year-old Texan who has invented an ingenious new "hearing" device. Called a neurophone, it transmits sound waves in the form of electrical impulses directly through the nervous system to the brain, where the impulses are interpreted as actual sounds.

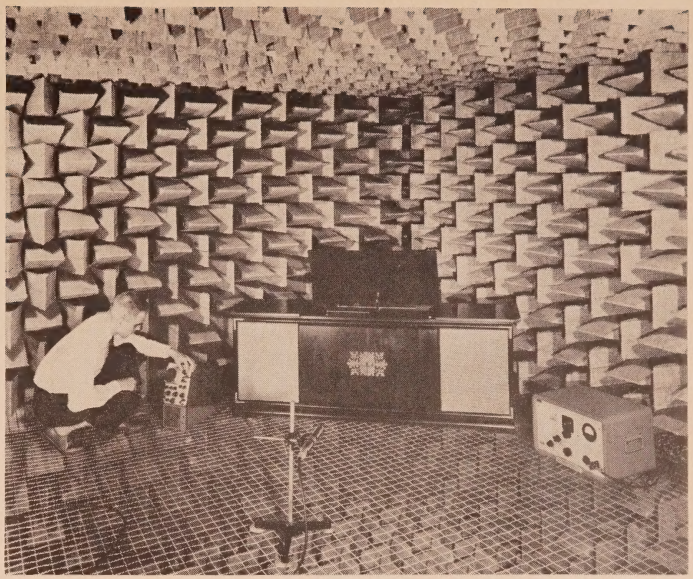
The young Texan's invention completely by-passes the ear mechanism! Its device can be placed anywhere on the body, but unless a subject is conditioned to the effect, best reception is received along the spinal cord, particularly at the base of the neck.

TIME SIGNAL ADJUSTMENT

An adjustment in the transmission of time signals is announced jointly by the U. S. Naval Observatory and the National Bureau of Standards, U. S. Department of Commerce. The transmitting clocks at the radio sta-

THE SOUND OF MUSIC

THIS ANECHOIC CHAMBER, one of only a relative few in the country, is located at Automatic Electric Co.'s plant in Northlake, Ill. Especially designed with 3,000 "wedges" of sound absorbent material on ceiling, walls and floor, it provides an echo-less atmosphere for testing audio devices. The engineer shown is making adjustments on sound-level measuring equipment, testing the frequency response and aural distribution of a stereo reproducer designed for home use.



tions will be retarded 100 milliseconds, November 1, 1963, at zero hours Universal Time (7 p. m., E.S.T. of 31 October).

The adjustment becomes necessary because of changes in speed of rotation of the earth, as determined by astronomical observation. Such adjustments are made by international agreement, according to a plan whereby the times of emission of time signals are synchronized to about 1 millisecond. The last previous adjustment in phase of time signal pulses was made August 1, 1961.

The countries participating in the coordination of time signal transmissions are Argentina, Australia, Canada, Italy, Japan, South Africa, Switzerland, United Kingdom, and the United States.

The U. S. stations include the NBS stations WWV, Beltsville, Md., WWVH, Maui, Hawaii, and WWVB, Fort Collins, Colo., and the U. S. Navy stations NBA, Canal Zone, NPG, San Francisco, Calif., NPM, Lualualei, Hawaii, NPN, Guam, and NSS, Annapolis, Md.

VOICE VIA 'WITCHCRAFT'

Since the Voice of America increased its power at its transmitting facilities on Okinawa early this year, primitive villagers in the north of the island have accused the U. S. agency of practicing witchcraft.

It seems that with the boost from 8,000 to 10,000 kilowatts, the stronger radio beams, especially after showers, are picked up by metal objects. This has made radios out of such things as bedsprings, and even caused damp leaves to issue a sound resembling an eerie human whisper.

Voice broadcasters calmed the villagers by explaining the phenomenon. Now the villagers are making another complaint.

All the broadcasts are in English, which few villagers understand.

AUTOMATED ORCHESTRA?

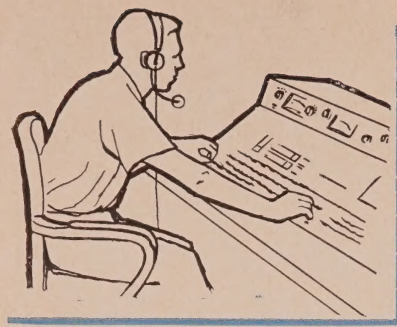
According to a recent news release, automation may come to the music world in a way which "makes an entirely new world of entertainment possible." The Chamberlain Instrument Company has developed a machine that duplicates the sounds of musical instruments, human and animal voices. There is apparently enough serious thinking about it to have evoked comment from Local 47 of the A. F. of M. What's next—a robot conductor? Maybe a robot audience?

NEW EIA STANDARDS AVAILABLE

The Electronic Industries Association has published a new standard for color codes for film resistors (Standard RS-279) and one on Solderless Wrapped Electrical Connections (Standard RS-280). The former is available at 25c per copy, the latter at $2. Minimum order, $1 unless EIA Standards Coupons are forwarded. These publications are available from the EIA Engineering Dept., Room 2260, 11 West 42nd Street, New York 36, N. Y.

ELECTRONIC POLICEMAN

The Federal government now maintains through the Commerce Department in Washington a National Driver Registry which electronically tells state auto-driver licensing bureaus whether or not a license applicant from out of state has a bad driving record.



STATION BREAKS

WCCO, WSM, WLW BID FOR 750 kw

WCCO, Minneapolis, last month asked the FCC for permission to increase its power from 50 kw to 750 kw, citing its position in the central area of America and the "white" areas of radio coverage as justification.

The petition of the station follows a request by the Clear Channel Broadcasting Service for 750 kw power for all clear channels and a brief in support of the CCBS petition filed by WSM Nashville, WLW Cincinnati. Another clear channel station has asked for the 750 kw power for experimental use.

The Class IA Minneapolis station, which is licensed to Midwest Radio-Television Inc., noted that in spite of the proliferation of radio stations in recent years about half the nation is still not served by nighttime radio. Situated near the center of the country, the station said it is ideally located to serve the vast center of the land, and could do so easily with 750 kw.

The 830 kc station said that it participated in the commission's clear channel proceeding, and that it hadn't applied for the higher power earlier because the FCC said it wouldn't accept such applications at that time.

NOTICE: LOCAL UNION OFFICERS

"Labor Organization Officer and Employe Reports," required by Section 202(a) of the Labor-Management Reporting and Disclosure Act, formerly accepted in letter form, are now required to be filed with the Director, Office of Labor-Management and Welfare-Pension Reports, Department of Labor, on a new Form LM-30. The reporting form is available from any one of the 24 area offices.

SPEAKING-ROLE PAY

IN NEW YORK CITY, the country's youngest union member will be a two-month-old infant who will appear in the new Joey Bishop television show. The baby will receive the standard rate for "speaking roles" because the union decided that a baby's cries are the same thing as dialogue.

PEORIA STATION MUST BARGAIN

WMBD-AM-FM-TV Peoria, Ill., was told early this month that it has engaged in unfair labor practices by refusing to bargain collectively with two unions representing employes of the stations. The National Labor Relations Board ordered the stations to "cease and desist" from the unfair practices and to bargain in good faith with the American Federation of Television and Radio Artists and the International Brotherhood of Electrical Workers.

The labor dispute arose following an NLRB-ordered election among WMBD employes in December, 1961. Following a series of disputes over challenged ballots, the unions were certified to represent employes on a 12-11 vote in October, 1962.

The Peoria stations refused to bargain with AFTRA and IBEW on the grounds that challenged ballots of five employes should have been counted.

LAST LAUGH

"I'll admit you have a critical voice on your union's policies; but they don't hold their meetings in here!"

ROLAND KISSLER
BOX 959
MOSES LAKE WASH